

Research on the Characteristics, Difficulties and Strategies of Government-Citizen Interaction from the Perspective of the Government Metaverse

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Abstract:

Human society is reaching a stage of deep mediatization, and the emergence of the metaverse provides new insights for the construction of digital governance. However, the construction of the government metaverse is a complex task marked by the coexistence of challenges, risks, and opportunities. It has also created some new challenges such as the digital divide, public opinion crises, information leaks, institutional challenges, and more, which should be treated with caution. This study used a multi-case study analysis to investigate the characteristics and challenges of government-citizen interactions from the perspective of the government metaverse. We proposed a set of measures to address its adverse effects: 1) bridging the dual digital divide caused by both internal and external factors; 2) collaboration between the government and media to enhance the order of public discourse space; 3) enhancing the legal construction of data management to ensure the security of personal and national information; 4) Alleviating the system to establish a positive interaction between the physical and virtual worlds. The study aims to provide valuable insights into the construction of China's governmental metaverse. We hope that this study will provide insights into the construction of the Chinese government metaverse, aiding in the establishment of a metaverse that provides convenient and user-friendly services, promotes equitable and efficient dialogues, and ultimately enhances the efficiency and satisfaction of governmental affairs.

Keywords:

Government Metaverse, Government, Citizen, Interaction

1. Introduction

If we consider 2021 as the “Epoch-Making Year for the Metaverse” and 2022 as the “Year of Widespread Adoption for the Metaverse”, then 2023 is considered to become the “Year of Practical Implementation for the Metaverse”, marked by the realization of policies and applications in the field of digital economy and information technology. [1] With the development of the internet, the concept of the metaverse

gained significant attention in 2021. During this year, scholars primarily studied the concept, technology, and applications of the metaverse[2]. Furthermore, they shed light on its future development trends. [3][4] In 2022, as the metaverse was widely used by all walks of life, scholars further refined their research on the specific applications of the metaverse in various scenarios. They introduced theoretical frameworks to analyze the technological infrastructure, intrinsic, and extrinsic systems associated with building the metaverse.

In terms of policy support, governments, such as Shanghai, Wuxi, Beijing, Hangzhou, and Xiamen, have released a variety of policies concerning the development and governance of the metaverse.

The advancement of digital technology has laid the foundation for the construction of the Metaverse and has also provided new ideas for the establishment of digital governance. And the concept of the “Government Metaverse” has emerged. The government metaverse is a novel form of government services, which is facilitated through the utilization of internet technology and diverse digital technologies and can create a symbiotic relationship between the real world and the virtual world [5]. Currently, in China, the exploration of the Government Metaverse is still in its beginning stages, primarily focused on theoretical frameworks and pilot projects. For example, the book *Government Metaverse*, co-authored by UCAP Cloud Information Technology Co.,Ltd (referred to as UCAP) and Tsinghua University Institute for Governance Studies (IGS), establishes a relatively comprehensive cognitive framework for the Government Metaverse. Additionally, In the *Metaverse Development Research Report*, researchers from Tsinghua University believed that the Government Metaverse can contribute to enhancing the quality of smart city services and overcoming offline barriers to public service. Simultaneously, UCAP collaborates with government institutions to provide support for the implementation and operational services of the Government Metaverse.

2. Materials and Methods

This study utilized a multi-case study analysis to explore metaverse information platforms established by local governments and media in China. Multi-case study approach comparing and analyzing two or more cases under the guidance of theoretical sampling principles. This method aims to identify similarities and differences among the investigators, and ultimately contribute to building theories. [6] The multi-case study approach provides a systematic and comprehensive perspective, elucidating concepts and their interrelationships through structured and diverse analytical strategies. With the development of digital technology, Government Metaverse could potentially serve as an iteration of traditional governance. The engagement of domestic industries in the metaverse also offers abundant cases. This study aims to comprehensively analyze the characteristics and challenges of government-citizen interactions in the government metaverse by using a multi-case study and proposes succinct, accurate, and universal recommendations.

Cases selected in this research: 1) Listen to the Two Sessions, an immersive VR news created by Xinhua News Agency and China Mobile(Beijing) during the Two Sessions in 2021. 2) The Global Online Memorial Ceremony of Confucius Metaverse news conference, organized by the Jining Cultural Heritage and Development Center. 3) The Metaverse Government Service Center in Nansha, Guangzhou. 4) The Metaverse Court Proceedings developed by Xiamen Siming District People's Court. 4)

The Metaverse city hall constructed on the Baidu Metaverse platform (MetaStack) in Fengxian District, Shanghai. The government metaverse cases analyzed in this study encompass both government-led and news media-led, covering multiple domains, including culture, law, and government affairs.

3. Results and Discussion

3.1. Characteristics of government-citizen interaction in the government metaverse

First, utilize digital humans as the interaction medium. Digital humans refer to virtual characters created by digital technology that simulate human traits and exist in non-physical environments [7]. The entities corresponding to digital people can be divided into two categories: natural persons and legal entities. Based on this, digital people can be categorized as those corresponding to individuals and those corresponding to organizations [7].

In the government metaverse, digital people corresponding to individuals take the form of virtual identities entities. A digital identity represents an individual's second self in the virtual world and serves as a gateway for the public to communicate and interact with the government. This autonomous digital identity combines the real and the virtual: they use real-world identity information to create a unified virtual presence while allowing users to select appearance and expressions for their virtual version. This empowers users to place their imagination about "second life" on the second self.

In the context of the governmental metaverse, digital people corresponding to institutions are designed for service, also known as government digital people. This kind of digital human is mostly established by governments and provides interactive services to clients, ensuring linkages across various services and enhancing government processes. For example, the service-oriented digital person at the consultation center of Metaverse Seoul City Hall offers functions such as answering inquiries, providing guidance, disseminating information, and facilitating interactive communication. When users seek advice from this digital person, it simulates a conversation with front desk staff in the real world.

Second, build an interactive bridge through immersive experiences. Users can immerse themselves in the metaverse world by embodying virtual digital people, thus attaining a deep sense of being present. [8]

Since the introduction of the concept of media integration, media have been considering how to fully engage the public in experiencing "live news" within the virtual scene. And some of their practices have received positive responses. For instance, the immersive interviews through multi-screen integration launched by Xinhua News Agency have gained over a hundred million online search queries. During the Two Sessions in 2021, Xinhua News Agency and China Mobile(Beijing) collaborated to introduce the immersive AR news project called Listening to the Two Sessions. [9] In this project, they created a virtual People's Congress Hall where the public can participate in the Two Sessions, engaging in discussions on hot topics with NPC deputies and CPPCC members as if they were truly there. Listening to the Two Sessions serves as an interactive bridge between the public, government, and media, transforming one-way communication into two-way communication. Participants are able to have close interactions with Two Sessions, which deepens their understanding

of national laws, regulations, and policies and plays a positive role in the implementation of government policies and guiding public opinion.

Third, create interactive scenarios based on real-world rules. Currently, the government metaverse is still in its early stages, and the construction of its operational scenarios primarily relies on digital twin technology. The government metaverse platform is a faithful rendition of offline governmental service halls and replicates the real-world rules and systems in the virtual space.

Taking Barbados as an example, the country originally planned to open a digital embassy in Decentraland by 2022. They purchased digital land in the virtual world, designed virtual embassies and consulates, and offered “e-visa” services. The current Barbadian Ambassador to the UAE, Gabriel Abed, said that the establishment of their digital embassy would strictly adhere to international law and the Vienna Convention on Diplomatic Relations. We can conclude that real-world rules are the foundation for constructing interactive scenarios in the government metaverse.

The interaction between public and governmental digital people in the government metaverse platform can, in turn, have an impact on real-world government affairs. Taking assets as an example, there are liquid digital assets in the metaverse. They are part of the metaverse's economic system. Therefore, governments need to enhance their regulations in the real world to ensure orderly service processes and help the public establish ownership rights over digital assets. [10]

Fourth, convey emotional values through humanistic care. Compared to virtual association using internet information technology, the embodied experience of “face-to-face” interactions in the metaverse can offer clearer non-verbal cues for communication, which provides a strong sense of experience and effectively conveys emotional values to the public.

Digital people provide users with a sense of care and authenticity by using a warm communication style, thereby promoting the dissemination of positive values. Virtual digital person, Gillie, became the first digital person to attend an event by UN Women. Her speech showed an exquisite developmental story, inner strength, and the value of science for good. Audiences could feel the emotional power of a personalized digital person through her presentation.

At present, the multi-modal AI assistant is one of the development trends for governmental digital people, which is patient, emotional, empathetic, and based on precise responses. The super-intelligent AI MOSS in the movie *The Wandering Earth II* is a highly developed service-oriented virtual digital person designed by humans. It can think and make decisions like humans, possesses emotions and consciousness, and is able to integrate resources by connecting data and networks. It also can offer specialized personal services such as caregiving and organizing tasks. However, if we want to create an artificial intelligence like MOSS in the real world, we must overcome the constraints posed by technology, data, ethics, and other factors.

3.2. Challenges of government-citizen interaction in the government metaverse

First, the metaverse is likely to deepen existing digital divides and even introduce new ones, resulting in inequalities in rights and opportunities among different user groups. The reasons can be discussed from two perspectives: 1) differences in the external objective environment; 2) variations in public digital literacy.

Regarding the external objective environment, the construction of metaverse platforms places high demands on infrastructure. It not only requires basic communication network infrastructure and computing power infrastructure to address fundamental transmission and computation issues but also relies on new technology infrastructure such as 5G, big data, cloud computing, and blockchain, as well as terminal access devices like chips, display devices, and wearable devices. The varying levels of development in different regions mean that cost and economic factors could become major obstacles to developing government metaverse platforms, particularly in rural and less-developed areas of China.

Regarding public digital literacy, elderly people and citizens in digitally impoverished areas are more likely to be referred to as digital immigrants. In terms of adaptability, residents in digitally impoverished areas and the elderly tend to be more conservative and reluctant to change. They possess lower abilities to discern the authenticity of online information and are more likely to become victims of online rumors and internet scams. Consequently, they have lower trust and even resistance towards virtual governmental services. In terms of learning ability, due to limitations like geography, age, and economics, residents of digitally disadvantaged areas and the elderly prefer to prefer traditional offline services. When it comes to handling government affairs online, they might face communication barriers and challenges with using smart products.

Second, in the metaverse platform, users exhibit strong subjectivity when interpreting events, making their stances and public opinion towards events more subtle. This complexity adds difficulty to the governance of public opinion in the government metaverse.

Objectively, the public enters the metaverse space requiring the use of digital identities, which is to some extent disconnected from their real-world identities. Compared to reality, the metaverse has characterized by lower levels of moral and legal constraints, which can reduce their adherence to authority. Subjectively, anonymity within the metaverse can prompt individuals to shift their focus from personal identity to social identity, following the rules of their respective groups. However, these group rules may sometimes differ from societal norms. [11] When individuals are subjected to lower levels of moral and legal constraints, or when they follow group rules rather than societal rules, it can lead to the emergence of negative emotions and disorderly behavior. For instance, this might manifest in online news comments with attacks, sarcastic critiques of officials, and even impulsive behaviors. Such behaviors have a negative effect on the order of public discourse space and government image.

In the government metaverse, a decentralized form of communication has emerged. Digital humans possess the right to express their opinions, leading to bidirectional information dissemination. Within the metaverse's public discourse space, people can share their opinions and engage in discussions with others, which dissolves the dominance of a single discourse center and disrupts the spread of mainstream ideologies. For example, participating in XR news conferences via the Metaverse platform allows the public to convey messages faster than official institutions, empowering them to voice opinions and take control of the discourse. So people are encouraged to express their opinions, which leads to conflicts and potential crises in public opinion governance.

Third, in the metaverse, data sharing can transcend time and space, breaking down geographical and governmental barriers to facilitate shared public services and data mobility. However, extensive information circulation also brings risks to personal privacy and national information security. [12]

On one hand, government services involve an amount of personal private information. Even in the metaverse platform, government services require individuals and businesses to share extensive information. Moreover, the terminals also need to capture and regularly update users' more private information, such as identity traits, social relationships, wealth status, behavior patterns, and even more sensitive data like brainwaves, biological features, and health information. Consequently, if user privacy data is leaked or misused, it could significantly disrupt real-world daily life and even threaten personal and property security.

On the other hand, the popularization of emerging technologies would increase the risk of national network information leakage. Evidence suggests that AI-based cyber attack tools have been utilized, and techniques such as voice simulation and identity forgery have a significant probability of being used in cyber attacks within the metaverse virtual space. The government metaverse platform relies on terminal products and the software and hardware required for these terminals. These devices contain an amount of high-value information and require extensive data processing and exchange, making them vulnerable to malicious software intrusion. A cyber attack on the government metaverse platform could lead to severe consequences.

Fourth, existing metaverse government platforms are indirectly governed based on institutions of the real world. Some concepts in the virtual and real worlds are not aligned or applicable, leading to difficulties in legislation and regulation.

The metaverse is a virtual world constructed based on the real world. In principle, all real-world government scenarios can be transferred to metaverse settings, but there are issues concerning their legality. For instance, for the judgments of a metaverse virtual court to be legally effective, it would require the establishment of the legal authority of such a court through legislation by the National People's Congress. Relying solely on the real-world legal system would be insufficient. The legal framework in the metaverse involves establishing the rights, obligations, and responsibilities of digital people's owners or users, and ensuring that their actions are governed by the law. However, determining the impact and consequences of user expressions in the metaverse on the real world, as well as the corresponding liabilities, requires further deliberation. Moreover, extreme political sentiments are often rooted in the real political environment, ultimately necessitating real-world solutions. The development and improvement of legal and regulatory systems for government metaverse still have a long way to go. [13]

4. Conclusions

4.1. Suggestions for the Governance of Government Metaverse

Firstly, in order to ensure equal access rights for vulnerable groups to enter the government metaverse platform in the digital age, the government needs to closely collaborate with relevant organizations. The collaboration should focus on bridging the digital divide from both the external objective environment and the public's digital literacy.

To bridge the gap in the external objective environment, it is necessary to develop digital infrastructure in digitally impoverished areas. Currently, there remains a significant disparity in Internet penetration between rural and urban areas in China, and 5G network coverage is limited. [14] Therefore, the government should advance the accession of the Internet in rural areas, formulate appropriate access and enhancement plans based on varying levels of digital technology development in different regions, and increase nationwide Internet coverage.

Bridging the gap in public digital literacy requires gradually integrating government Metaverse services into public life. Currently, there is a significant urban-rural disparity in digital literacy among Chinese residents. Specifically, farmers have notably lower digital literacy compared to other occupational groups, and the elderly have the weakest digital skills. In terms of technological effectiveness, the government should adapt the Internet public services to be more accessible and user-friendly for the elderly population, removing basic operational barriers for digital migrants. In terms of collaborative multi-stakeholder efforts, the government needs to provide funding support and policy safeguards and also plays a role in communication and governance, creating a favorable environment for nurturing digital literacy for all citizens.

Furthermore, the government should collaborate with the media to manage and guide public opinion, allowing excellent culture to lead the discourse within the public space of the metaverse. This will help create a harmonious atmosphere for public discourse and ensure the orderly expression of public opinions.

For values, the government should guide the mainstream value, support the establishment of media platforms, and foster strong collaboration between the government and the media. For content generation, the media should act as gatekeepers, ensuring the authenticity of news, uncovering news value, and developing various value-added news products. In terms of technology applications, all stakeholders should collaborate to enrich news content and forms, creating a holography, all-time, panorama information platform to provide the public with enhanced interactive experiences. For resource integration, a new model of media convergence should be established, enhancing the societal impact of the government metaverse. [15]

What's more, the government should establish a coordinated data governance model both internally and externally, and provide a legal framework to ensure data governance is guided by the rule of law.

On one hand, the government should establish a team of digital technology experts to effectively supervise data usage. The government should define the boundaries between internal and public data and regulate data usage permissions among different departments. Such measures can prevent government data leakage and ensure the orderly public release of public data. On the other hand, strengthening government-business cooperation is essential. The government should encourage companies to prioritize privacy protection during system development and continuously enhance regulatory measures throughout the development, operation, and service phases. Such measures could help prevent unlawful business practices and malicious use of technology for business. Additionally, the government should formulate targeted laws based on the unique characteristics of public data and the government metaverse

platform and redefine relevant concepts. Ultimately establish a legal framework for data governance.

Finally, the government should adopt real-world systems to fit the metaverse's context, allowing for regulating behaviors within the metaverse and achieving multiple co-governance.

The government should strengthen internal mechanisms, guide proper orientation, and enhance user moral constraints. The metaverse aims to establish a decentralized virtual space. But its decentralized core doesn't align well with rules established by authoritative entities [16]. Therefore, ideological governance takes precedence over administrative and judicial measures. The government should rely on real-world ethical norms to regulate immoral practices in the government metaverse and prepare for subsequent legislative efforts. What's more, the government should strengthen external mechanisms and refine institutional norms. The regulatory framework of the government metaverse should be continually adjusted as decision-makers reassess and consider real-world institutions. [17]

4.2. Summary

China has taken the first steps towards developing the government metaverse. From metaverse reception areas to virtual government service halls, and from digital virtual assistants providing online answers to image representation and endorsement, the metaverse is poised to bring significant convenience to the public and enhance the experience of government services. [18]

Specifically, the governance of government metaverse platforms needs to focus on four aspects: digital infrastructure, discourse order, information security, and institutional norms. In terms of digital infrastructure, tailored approaches should be adopted based on local conditions to promote technology adoption, address the needs of digitally disadvantaged groups, and ensure the accessibility of public services. For discourse order, it's essential to nurture the proactive role of both the government and media, enhance their coordination, establish platforms for shaping public opinion, and facilitate the broad dissemination of mainstream ideological values. Regarding information security, advancing the legal framework for data governance is crucial. The government should strengthen both internal and external data supervision by the government and make efforts to safeguard personal privacy and national information security. For institutional norms, the government should guide the public to internalize moral standards while simultaneously enforcing external constraints through systems.

"Cyberpunk's godfather", William Gibson, once said, the future is already here, it's just not evenly distributed. The application scenarios of the metaverse in the future have a wide range of possibilities. And academia and industry need to collaborate in promoting this together. As the government metaverse continues to evolve, all industries should maintain a cautious stance and effectively address the challenges and potential disruptions that metaverse technology might bring to traditional industries.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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References

- [1] Zhang, X.P. 2022 China Metaverse Science and Technology Communication White Paper[R/OL]. *China Science and Technology Information*, 2023, 691(02), 2-22.
- [2] Zhang, X.W.; Bi, Y.X.; Zheng, C. Integration of Library and Metaverse Theories: Connotative Features, Architecture and Development Trends. *Library & Information*, 2021, (06), 81-89.
- [3] Xin, H.X. From Technical Concepts to Research Topics: What Future for Metaverse Libraries. *Library & Information*, 2021, 06, 90-95.
- [4] Eisenhardt, K.M. Building Theories from Case Study Research. *Academy of Management Review*, 1989, 14(4), 532-550.
- [5] Guitton, M.J. The Immersive Impact of Meta-media in a Virtual World. *Computers in Human Behavior*, 2012, 28(2), 450-455.
- [6] Shi, Y.J.; Miao, W.Q. A Test of McLuhan's Media Theory in the Age of Integrated Media. *Today's Mass Media*, 2023, 31(03), 46-49.
- [7] Xu, X. Meta-Universe from the Perspective of Historical Materialism: Formation Mechanism, Critical Dimension and Reconstruction Path. *International Journal of Education and Humanities*, 2022, 3(2), 136-140.
- [8] Vilanova, F.; Beria, F.M.; Costa, Â.B., et al. Deindividuation: From Le Bon to the Social Identity Model of Deindividuation Effects. *Cogent Psychology*, 2017, 4(1), 1308104.
- [9] Li, J. Potential risks and Regulatory Countermeasures of the Development of Pass Economy in the Meta Universe. *Metaverse*, 2021, 2(1), 16.
- [10] Qi, A.M.; Ni, D. The Proposal of a Metaverse Virtual Court and its Legal Mechanisms[J/OL]. *Journal of Shanghai University of Political Science and Law(The Rule of Law Forum)*: 1-15[2023-03-31].
- [11] Editor of the Journal. Highlights of Digital Village Development in 2022 (Summary). *Agricultural Engineering Technology*, 2022, 42(12), 7-10.
- [12] Cui, Y. Exploring Ways to Strengthen the Discourse Power of Mainstream Media in the Development of Media Convergence. *News Culture Construction*, 2022, 63(21), 112-114.
- [13] Zhang, Q.Y. The Governance Rules of Metaverse. *Oriental Law*, 2022, 2, 4-19.
- [14] Turdialiev M. Legal Discussion of Metaverse Law. *International Journal of Cyber Law*, 2023, 1(3).
- [15] Zhao, G.D.; Yi, H.H.; Xu, Y.Z. Metaverse. China Translation & Publishing House: Beijing, China. 2021. 9787500166917.
- [16] Meng, Q.G.; Yan, Y.; Zhao, G.D. Government Metaverse. China Translation & Publishing House: Beijing, China. 2022; pp. 48–61; 9787500171454.

- [17] Wang, H. Design Goals and Feasible Design Logic of Meta Smart City[C]//International Conference on Human-Computer Interaction. Cham: Springer Nature Switzerland, 2023, 560-566.
- [18] SKLMCC - CUC. Available online: <https://mp.weixin.qq.com/s/qd0vQhjs4n0Zhf-N4aPSiA> (accessed on 1 August 2023).



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